

CLAIMS

1. A semiconductor device comprising:

an integrated circuit using a thin film transistor;

an antenna;

5 a first sealing film;

a second sealing film; and

a substrate,

wherein the integrated circuit and the antenna are electrically connected to each other,

10 the integrated circuit is sandwiched between the first sealing film and the second sealing film,

the first sealing film is sandwiched between the substrate and the integrated circuit,

15 the first sealing film includes a plurality of first insulating films and one or a plurality of second insulating films sandwiched between the plurality of first insulating films,

the second sealing film includes a plurality of third insulating films and one or a plurality of fourth insulating films sandwiched between the plurality of third insulating films,

20 the one or the plurality of second insulating films has lower stress than the plurality of first insulating films,

the one or the plurality of fourth insulating films has lower stress than the plurality of third insulating films, and

25 the plurality of first insulating films and the plurality of third insulating films are inorganic insulating films.

2. A semiconductor device comprising:

an integrated circuit using a thin film transistor;

an antenna;

30 a first sealing film;

a second sealing film;

a substrate; and

a cover member,

wherein the integrated circuit and the antenna are electrically connected to

5 each other,

the integrated circuit is sandwiched between the first sealing film and the second sealing film,

the first sealing film and the second sealing film are sandwiched between the substrate and the cover member,

10 the first sealing film includes a plurality of first insulating films and one or a plurality of second insulating films sandwiched between the plurality of first insulating films,

the second sealing film includes a plurality of third insulating films and one or a plurality of fourth insulating films sandwiched between the plurality of third  
15 insulating films,

the one or the plurality of second insulating films has lower stress than the plurality of first insulating films,

the one or the plurality of fourth insulating films has lower stress than the plurality of third insulating films, and

20 the plurality of first insulating films and the plurality of third insulating films are inorganic insulating films.

3. A semiconductor device comprising:

an integrated circuit using a thin film transistor;

25 an antenna;

a first sealing film;

a second sealing film;

a substrate; and

a cover member,

30 wherein the integrated circuit and the antenna are electrically connected to

each other,

the integrated circuit and the antenna are sandwiched between the first sealing film and the second sealing film,

the first sealing film and the second sealing film are sandwiched between the substrate and the cover member,

the first sealing film includes a plurality of first insulating films and one or a plurality of second insulating films sandwiched between the plurality of first insulating films,

the second sealing film includes a plurality of third insulating films and one or a plurality of fourth insulating films sandwiched between the plurality of third insulating films,

the one or the plurality of second insulating films has lower stress than the plurality of first insulating films,

the one or the plurality of fourth insulating films has lower stress than the plurality of third insulating films, and

the plurality of first insulating films and the plurality of third insulating films are inorganic insulating films.

4. The semiconductor device according to claim 2 or 3, wherein the cover member has flexibility.

5. The semiconductor device according to any one of claim 1 through claim 4, wherein the antenna and a gate electrode of the thin film transistor are formed by patterning a conductive film.

6. The semiconductor device according to any one of claim 1 through claim 4, wherein the antenna and a wiring connected to the thin film transistor are formed by patterning a conductive film.

7. A semiconductor device comprising:

an integrated circuit using a thin film transistor;

an antenna;

a first sealing film;

a second sealing film;

5 a substrate; and

a cover member,

wherein the integrated circuit is sandwiched between the first sealing film and the second sealing film,

the first sealing film and the second sealing film are sandwiched between the substrate and the cover member,

the cover member is sandwiched between the antenna and the second sealing film,

the integrated circuit and the antenna are electrically connected to each other via a contact hole formed in the cover member and the second sealing film,

15 the first sealing film includes a plurality of first insulating films and one or a plurality of second insulating films sandwiched between the plurality of first insulating films,

the second sealing film includes a plurality of third insulating films and one or a plurality of fourth insulating films sandwiched between the plurality of third insulating films,

20 the one or the plurality of second insulating films has lower stress than the plurality of first insulating films,

the one or the plurality of fourth insulating films has lower stress than the plurality of third insulating films, and

25 the plurality of first insulating films and the plurality of third insulating films are inorganic insulating films.

8. The semiconductor device according to claim 7, wherein the cover member has flexibility.

9. A semiconductor device comprising:

an integrated circuit using a thin film transistor;

a first sealing film;

a second sealing film; and

5 a substrate,

wherein the integrated circuit is sandwiched between the first sealing film and the second sealing film,

the first sealing film is sandwiched between the substrate and the integrated circuit,

10 the integrated circuit includes an connection terminal,

the integrated circuit further includes a rectification circuit for generating a supply voltage from an alternating-current signal that is input in the connection terminal by an antenna; a demodulation circuit for generating a first signal by demodulating the alternating-current signal; a microprocessor for performing arithmetic processing in accordance with the first signal to generate a second signal; a modulation circuit for modulating the second signal; and a switch for modulating load applied to the antenna in accordance with the modulated second signal,

15 the first sealing film includes a plurality of first insulating films and one or a plurality of second insulating films sandwiched between the plurality of first insulating films,

20 the second sealing film includes a plurality of third insulating films and one or a plurality of fourth insulating films sandwiched between the plurality of third insulating films,

25 the one or the plurality of second insulating films has lower stress than the plurality of first insulating films,

the one or the plurality of fourth insulating films has lower stress than the plurality of third insulating films, and

the plurality of first insulating films and the plurality of third insulating films are inorganic insulating films.

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10. The semiconductor device according to any one of claim 1 through claim 9, wherein the substrate has flexibility.

11. The semiconductor device according to any one of claim 1 through claim 5 10, wherein the plurality of first insulating films or the plurality of third insulating films includes silicon nitride, silicon nitride oxide, aluminum oxide, aluminum nitride, aluminum nitride oxide or aluminum silicon nitride oxide.

12. The semiconductor device according to any one of claim 1 through claim 10 11, wherein the one or the plurality of second insulating films or the one or the plurality of third insulating films includes polyimide, acrylic, polyamide, polyimide amide, benzocyclobutene or epoxy resin.